



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

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U. S. Geological Survey
Carlsbad, N. M.

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Authorized by: SC

Date: 6/25/73

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Honorable Harrison Loesch
Assistant Secretary of the Interior
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Loesch:

This is in reply to your letter of May 30, 1972, requesting information on uranium production costs and projected sales prices for use by Indians in connection with determination of royalty rates on mining leases.

The average costs of uranium mining and milling operations on a per-ton basis, distinguishing between open pit and underground mining methods, are estimated as follows:

	Average cost - \$ per ton of ore	
	<u>Open Pit Mines</u>	<u>Underground Mines</u>
Mining	9.75	12.70
Haulage	0.65	1.00
Milling	<u>5.75</u>	<u>6.20</u>
Total	16.15	19.90

The average grade of ore produced from underground mines is slightly higher than from open pit mines, compensating partially for the difference in cost per ton of ore.

The average costs per ton, distinguishing between the total U. S. and the Southwest, are estimated as shown below:

	Average cost - \$ per ton of ore	
	<u>Southwest</u>	<u>Total U. S.</u>
Mining	9.40	11.00
Haulage	0.80	0.80
Milling	<u>5.10</u>	<u>5.95</u>
Total	15.30	17.75

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The above cost estimates are believed to be representative of the producing industry today, in which a large proportion of the facilities have been amortized. The estimates include only forward capital and operating costs. Investment already made for property, facilities, exploration and other sunk costs are not included. Royalty is also excluded.

As new facilities are built, these estimates can be expected to change. We expect that the capital costs of new mining and milling facilities will be in the range of \$8.00 to \$12.00 per ton based on a 10-year amortization period. Exploration costs are increasing as drilling to greater depths becomes necessary. While the variation among properties is very large, the U. S. average is estimated to be about \$3.60 per ton of ore. Royalties are also quite variable, but on a total U. S. basis are estimated at about \$1.50 per ton or \$0.35-0.40 per pound of U₃O₈. 3109

The average transportation costs are approximately 4.5¢ per ton mile, and usually fall within a range of 3 to 6¢ per ton mile depending on haulage distance. Longer hauls generally result in lower ton-mile costs.

The prices of U₃O₈ in concentrates for short-term delivery are now usually in the range of \$6.00 to \$6.50 per pound. It is difficult to predict the price trend between now and 1983, except to say the trend is expected to be upward. In long-range projections we have been using a "most likely" price increase range from 1½ to 2½% per year. On this basis the price in 1971 dollars may be \$7 to \$8.50 per pound about 1980, and \$7.50-9.00 by 1983. These projections could be changed substantially by shifts in either supply or demand.

We hope the information we have furnished will prove helpful to the Indians in their lease negotiations. Mr. Richard Schifter, attorney for the Laguna Pueblo, and four representatives from the Tribe met with us on May 18 1972. We provided them with a number of documents on the uranium

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producing industry, including information on mining and milling costs. Also, Mr. Philip R. Ashby, an attorney for the Laguna Pueblo, together with several Tribal representatives, will visit the AEC office in Grand Junction, Colorado, this week. Our staff is planning to discuss mining and milling costs with them in greater detail.

Sincerely yours,



Frank P. Baranowski
Director
Division of Production
and Materials Management

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